5167
5168

Form 504
Ed. June, 1928

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

R.S.Patton, Director

State: Massachusetts

DESCRIPTIVE REPORT

~~Topographic~~
Hydrographic } Sheet No. 2 & 2A

5167
5168

LOCALITY

Off Cape Cod.

Georges Bank.

19 31.

CHIEF OF PARTY

W. E. Parker.

U. S. GOVERNMENT PRINTING OFFICE: 1928

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Form 504

U. S. COAST AND GEODETIC SURVEY

DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey Hydrographic

Field No. ..... Office No. 5167 5168

LOCALITY

State Massachusetts

General locality Off Capi

Locality Cod. Georges Bank

1931

CHIEF OF PARTY

W. E. Parker

LIBRARY & ARCHIVES

DATE .....

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Form 537
Ed. Sept., 1929

REG. NO. 5167

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

HYDROGRAPHIC TITLE SHEET

The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

Field No. 2

REGISTER NO. 5167

State Massachusetts

General locality ~~Off Cape Cod~~ Georges Bank

Locality ~~Georges Bank~~ Central Part

Scale 1:100,000 Date of survey June - August, 1931

Vessels HYDROGRAPHER - OCEANOGRAPHER - LYDONIA - GILBERT.

Chief of Party W. E. Parker

Surveyed by W. E. Parker and L. O. Colbert

Protracted by E. H. Kirsch and E. B. Brown, Jr.,

Soundings penciled by E. H. Kirsch and E. B. Brown, Jr.

Soundings in fathoms ~~feet~~

Plane of reference Mean Low Water.

Subdivision of wire dragged areas by

Inked by

Verified by

Instructions dated April 27, 1931 and August 21, 1931

Remarks:

U. S. GOVERNMENT PRINTING OFFICE: 1930

Desc. Rept. #243
9 Vols. Sdgs.
2 Bomb. Rec.
2 B.S.
Des. Rept.

Form 537
Ed. Sept., 1929

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

REG. NO. 5168

HYDROGRAPHIC TITLE SHEET

The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

Field No. 2A

REGISTER NO. 5168

State Massachusetts

General locality ~~Off Cape Cod~~ Georges Bank

Locality ~~Georges Bank~~ Central Part

Scale 1:40,000 Date of survey June - August, 1931

Vessel HYDROGRAPHER - OCEANOGRAPHER - LYDONIA - GILBERT.

Chief of Party W. E. Parker

Surveyed by W. E. Parker and L. O. Colbert

Protracted by John C. Tribble, Jr.

Soundings penciled by John C. Tribble, Jr.

Soundings in fathoms ~~feet~~

Plane of reference Mean Low Water

Subdivision of wire dragged areas by

Inked by

Verified by

Instructions dated April 27, 1931 and August 21, 1931

Remarks:

[redacted]

U. S. GOVERNMENT PRINTING OFFICE: 1929

Sk. Rep. #243 files with H. 5167

5 Vols. files with H. 5167

Res. Rep.

IRS.

DESCRIPTIVE REPORT

TO

ACCOMPANY

HYDROGRAPHIC SHEET NO. 2 5167

.....

DATE OF INSTRUCTIONS:

The instructions directing the work on this sheet were contained in the Director's orders to the Commanding Officer of the U.S.C. & G.S.S. HYDROGRAPHER dated April 27, 1931.

SURVEY METHODS:

Separate reports have been submitted by the ships engaged in this work for various phases of the work, especially in regard to the determination of buoy signals and stations and to the computation of the velocity of sound for reduction of soundings and location of distances from various positions to the station ships. It is only necessary to state here that two station ships were used on this work and that two sounding ships bombed R.A.R. distances to each to locate positions on the sounding lines. Where two bomb distances could not be obtained , as in the first few days' work, adjustment of positions was made from all data available. This included one bomb distance, current and courses steered. Where the lines extended to the southward, positions were transferred from the 200,000 scale sheet (field No. 1) and dead reckoning loops carried through both sheets for closure.

H.5153

DISCREPANCIES:

The following remarks apply to the data compiled by the OCEANOGRAPHER only.

It is desired to state that most of the soundings on this hydrographic sheet were taken with the striker fathometer (Type 412). This instrument was steadier and easier to read than the electric oscillator (Type 312) fathometer.

Before soundings were actually begun, careful comparisons were made between both fathometers and vertical lead line soundings in depth of twenty to thirty fathoms. The differences were slight and consistent, but it was later found that the striker fathometer was subject to a variation after it had been in operation for some hours. This was not noted until after the return of the ship to the working grounds. Unfortunately on C day no direct comparison between fathometer and vertical lead line was made and on D day comparisons were made only between the two fathometers. For the index correction on C day that of the previous day was used and for D day that of a later day. The striker fathometer was out of commission for two days afterwards. An inspection of the soundings plotted with these correction shows that the use of them was in error.

C day

D day

It will be seen that the soundings as plotted in pencil do not agree with those of other lines which cross or are adjacent. The slope of the bottom beyond the line connecting Buoys Dog and Fox is remarkably gradual. It would appear that the striker fathometer on C day did not function with

the same correction as on B day but gave soundings which were too shoal when using a four foot correction. On D day the correction of 14 feet (obtained from G day) was apparently too great. This latter assumption is borne out by the comparison between the two fathometers made between 17:39 and 17:56 o'clock, June 18th, while sounding about position 16 D. The following table shows the soundings as corrected in the book.

D day

	Fathometer 412 (Striker)			Fathometer 312 (Electric)	
	fms	feet		fms	feet
	34	2		34	1
	34	5		33	4
	35	2		33	4
	35	5		33	4
	36	2		35	1
5	176	4	5	170	2
	35	2		34	0

It was not considered feasible to make any other correction in the record books due to lack of accurate information, but the followings recommendation is made for adjusting the soundings on the smooth sheet with explanatory note in the record books.

a) Increase soundings on C day by one fathoms. ✓Recomm. followed.

b) Decrease soundings on D day by one fathom. {Decreased by one fath., 6 sdgs: 1D to 16 D, 28 D to 33 D, 1E to 5E. These sdgs. were reduced with index correct. of 14 ft., Fath.* 412 type. All other sdgs. including those by * 312 type agree satisfactorily with accredited nearby work & were not decreased.

c) Decrease soundings on E day from 1 E to 16 E by one fathom. (This is a continuation of D day after midnight using the striker fathometer.)

SHOALS:

The shoalest sounding obtained was 9 fathoms in Latitude 41° 37', Longitude 67° 20½'. Three 11-fathom spots were found near this sounding, one about a mile to the west, another less than a mile to the north and the third about two miles to the north. A 10-fathom sounding was obtained about five miles to the southward. The area covered by these above-mentioned soundings is extremely irregular. It extends in line with them southward almost to the line between signals Dog and Fox. The shoal bumps at the southern part are 15, 16, 18, and 19 fathoms. Tidal swirls and slicks were prominent in this area but not always visible. They showed in a smooth sea and during certain directions of the current flow much more appreciably than at other times.

No comparison with previous surveys was attempted in the field due to the question of control of previous surveys.

L.O. Colbert

L.O. Colbert, Comdr, C. & G.S.,
Commanding Ship OCEANOGRAPHER.

DESCRIPTIVE REPORT

TO

ACCOMPANY

HYDROGRAPHIC SHEETS 2 & 2A
5167 5168
(Hydrographer's Section)

DISCREPANCIES:

There are no apparent discrepancies in the "Hydrographer's" work on Sheet 2 and 2A. (H5167) (H.5168)

The following sections of days plotted on (H5153) Sheet 1 were replotted on Sheet 2 (H.5167) in order to examine the junctions:

"Hydrographers"

A day - 1 to 3	These days were marked with a sub-number 1 to differentiate them from the regular sheet 2 days
47 to 49	
B day - 1 to 11	
43 to 45	
C day - 1 to 14	
51 to 61	
D day - 1 to 10	
F day - 1 to 10	

The following sections from sheet 2 were replotted on sheet 2A: (H.5167) (H.5168)

"Oceanographers"

G day - 24 to 28
37 to 44
53 to 72
107 to 115
H day - 1 to 53.

JUNCTIONS:

The junctions between sheet 2 the 1930 season's work, sheet 2A, sheet 3 and sheet 4 were examined and found to be good considering the uneven nature of the bottom.

D (Hyd.)

The Oceanographer's "D" line beginning at Buoy Able with Position 1D is deep in comparison with soundings on lines in the same vicinity taken from last season's work. (See Capt. Colbert's section of this descriptive report page 2 paragraph 3.)

The crossings on the shoals at the approximate latitude location 41°-37' longitude 67°-22' are not especially good. The bottom is decidedly uneven and very slight errors in position of the soundings cause the bad crossings. In view of the fact that the lines that develop these shoals fall on three sheets "2", "2A", and "3B" with different positions of the station ships on the different days it is difficult to make recommendations as to possible shiftings of the lines to improve the crossings.

There are also numerous kids reefs in the area.

The junctions with sheet 2A are good with the exceptions noted in the above paragraph.

Roland D. Horne

Roland D. Horne,
H. & G. Engineer,
Coast and Geodetic Survey.

STATISTICS

SHEET 2 5167

		Positions	Soundings	Miles
Hydrographer	A day	73	911	121.0
"	B day	44	415	77.0
		117	1326	198.0
Oceanographer	A day	25	183	41.4
"	B day	40	244	83.7
"	C day	80	696	172.2
"	D day	33	363	84.3
"	E day	107	663	146.3
"	F day	48	371	114.3
"	G day	65	820	70.8
"	H day	91	1111	93.9
"	J day	63	1154	93.0
		552	5605	899.9
Replotted 5153 from Sheet 1 Hydrographer work ---	A day	16	153	32.5
	B day	14	90	11.1
	C day	25	286	56.2
	D day	10	117	25.5
	F day	10	112	27.4
		75	758	152.7

STATISTICS

SHEET 2A 5168

		Positions	Soundings	Miles
Hydrographer	C day	108	1054	153.0
"	D day	78	802	98.3
"	E day	65	716	91.5
"	F day	110	860	94.2
"	G day	42	382	49.0
		403	3814	486.0
Replotted from	G day	41	492	46.5
Oceanographer's	H day	53	860	57.0
		94	1352	103.5

work Sheet 2

REPORT OF INSPECTION:

These sheets - 2 and 2A - and accompanying records have been examined and are hereby approved.

Roland D. Horne
U. S. C. Engr.

J. G. Parker
Chief Clerk

5167

June 16, 1932.

Division of Hydrography and Topography:

Division of Charts:

Tide Reducers are approved in
7 volumes of sounding records for

HYDROGRAPHIC SHEET **5167 and 5168 (combined)**

Locality **Georges Bank, Coast of Massachusetts**

Chief of Party: **W. E. Parker and L. O. Colbert in 1931**
Plane of reference is **mean low water, reading**
3.3 ft. on tide staff at **Commonwealth Pier No. 5, Boston, Mass.**
18.2 ft. below B. M. **7**

Allowance made for time and range of tide on the working grounds.
Time -1^{h} 15^{m}; range 0.5 as large.

Condition of records satisfactory except as checked below:

1. Locality and sublocality of survey omitted.
2. Month and day of month omitted.
3. Time meridian not given at beginning of day's work.
4. Time (whether A.M. or P.M.) not given at beginning of day's work.
5. Soundings (whether in feet or fathoms) not clearly shown in record.
6. Leadline correction entered in wrong column.
7. Field reductions entered in "Office" column.
8. Location of tide gauge not given at beginning of day's work.
9. Leadline corrections not clearly stated.
10. Kind of sounding tube used not stated.
11. Sounding tube No. entered in column of "Soundings" instead of "Remarks".
12. Legibility of record could be improved.
13. Remarks.

Paul P. Whitney

Chief, Division of Tides and Currents.

SECTION OF FIELD RECORDS
Report on Hydrographic Sheet No. 5167.
Central Part of Georges Bank, Mass.
Instructions dated May 17, 1930 and April 27, 1931 (Hydrographer).
Survey in 1931
Chief of Party - W. E. Parker.
Surveyed by - W. E. P., L. O. Colbert.
Protracted by - E. H. Kirsch, E. B. Brown, Jr.
Soundings plotted by E. H. K., E. B. B. Jr.
Verified and inked by G. Risegari.

1. The records conform to the requirements of the General Instructions.

2. The plan and character of development fulfill the requirements of the General Instructions.

3. The plan and extent of development satisfy the Specific Instructions. Exceptions:- Failure to make comparisons with vertical casts on C and D days as per paragraph 45 of the May 17, 1930 instructions; failure to get bottom characteristics as per paragraph 48, same instructions. Seven bottoms shown, should have been 48.

4. With the exception of the area in the vicinity of lat. 41°25', long. 67°15' there are only a few sounding line crossings.

It is regrettable that more sounding line crossings were not run on this sheet particularly in the southeastern part where difficulty was experienced with C and D days (red). It is quite evident that had several cross lines been made here, a better understanding of the area should have resulted and helped to determine whether the other lines are impeachable for use as a basis for the adjustments of C and D days, explained in paragraph 7 of this report.

The soundings over the whole sheet appear to be in very good agreement and not illogical, notwithstanding the lumpy bottom condition of several parts of the survey.

5. All the depth curves can be completely drawn.

6. The junction with H. 5112a (East) is satisfactory.
The junction with H. 5168 (West) is satisfactory.
The junctions with H. 5153 (South and East), H. 5170 (West), H. 5195 (West and North) H. 5173 (North), and H. 5196 (North) will be reported when completed.

7. Attention is called to page 3, Descriptive Report by Chief of Party (Oceanographer) wherein recommendations are made for corrections to soundings on C, D, and E. days, (red), which original soundings it was believed appear inconsistent with other lines of soundings.

The soundings in question were plotted on tracing paper with the respective increases and decreases as recommended and a comparison with accredited work was made.

The following changes were made as a result of the study:

All soundings on C day were increased by one fathom, as recommended.

All soundings on D day appear satisfactory, except 1D to 16D, 28D to 33D, which were decreased by one fathom, - it was recommended to decrease all soundings on D day.

Soundings from 1E to 5E were decreased by one fathom,- it was recommended to decrease all soundings from 1E to 16E.

All these soundings were reduced by an index correction of 14 feet, using the 412 type fathometer, which correction was obtained from the comparisons made on G day, as no comparisons were obtained on C & D days (see report by field party, pages 2 and 3) and it appears in these instances that the index correction used is incorrect. The other soundings on these days, however, including those taken by the 312 type fathometer agree satisfactorily with accredited work in same area and were not decreased.

Comparison with the work on old surveys, H. 1305 and H. 2917 of this area was made and in several instances the soundings made good agreement but in general the soundings of the old work appear out of position. The methods used for the control and running of the lines on the old work not being comparable with the present improved methods, apparatus, etc., and since no critical depths are involved, it is recommended that the soundings on H. 5167 supersede the soundings of the old surveys, but to use the bottom characteristics on the charts in areas where such are deficient on H. 5167.

8. All important areas covered by this sheet appears to be sufficiently developed by this or by the overlapping surveys, except the area in the vicinity of lat. 41°40', long. 67°17' and the area in the vicinity of lat. 41°15', long. 67°38'.5. The area inside the 20 fathom curve at the western limit of the sheet should have been surveyed on a 1-40,000 scale with lines not over ½ mile apart.

Reviewed by - G. Risegari. August 12, 1932.

Inspected: E. P. Ellis.

Approved: A. M. Sobieralski.

SECTION OF FIELD RECORDS
Report on Hydrographic Sheet No. 5168.
Central Part of Georges Bank, Mass.
Surveyed in 1931.
Instructions dated May 17, 1930 and April 27, 1931 (Hydrographer).

Chief of Party - W. E. Parker.
Surveyed by - W. E. P., L. O. Colbert.
Protracted by - J. C. Tribble, Jr.
Soundings plotted by - J. C. T., Jr.
Verified and inked by - G. Risegari.

1. The records conform to the requirements of the General Instructions.

2. The plan and character of development fulfill the requirements of the General Instructions.

3. The plan and extent of development satisfy the Specific Instructions. Exception:- Failure to get one bottom characteristic for each 25 square miles as per paragraph 48, May 17, 1930 Instructions. The survey covers 300 square miles and there are 4 bottom characteristics.

It is regrettable that more sounding lines were not run particularly where the 20 fathom curve now appears as dashed. These curves as shown, it is believed, are the most probable ones which can be drawn and are recommended for acceptance.

4. There are very few sounding line crossings on the sheet, although numerous closely parallel lines afford comparisons.

5. The junction with H. 5167 (East, South, West) is satisfactory.
The junction with H. 5112a (Southeast) is satisfactory.
The junction with H. 5196 (North) will be reported by reviewer of that sheet when completed.

6. Comparison with the work on the old surveys, H. 1305 and H. 2917 of this area was made. The methods used for the control and running of the lines on the old work not being comparable with the present improved methods, apparatus, etc., it is recommended that the soundings of the old surveys be superseded by those on H. 5168.

Attention is called to an undeveloped area North of latitude 41°32', approximately on Longitude 67°23'.

7. All important areas covered by this sheet appears to be sufficiently developed by this survey.

Reviewed by G. Risegari - August 20, 1932.

Remarks:

About three-fourths of the area of this sheet is characterized by a series of narrow ridges and valleys, the ~~area~~ axes of which are approximately normal to the direction of maximum tidal current, which is ~~radical~~ rotary in this region. The longest ridge is 12 miles in length with minimum depths of 14 fathoms and the

maximum depth in the valleys on either side of the ridge is 23 fathoms.

It is worthy of note that if the fathometer had not been available to reveal the rapid changes in the depths and the RAR to fix locations accurately, it would have been impossible to draw the curves as shown. The bottom would probably have appeared as an unrelated mass of holes and small shoals.

Also it is fortunate that the sounding lines ran north and south. East and west lines would not have revealed the true character of the bottom.

Approved: A. M. Sobieralski. E. P. Ellis.

Addenda to Review of H. 5168

1. Spacing of Sounding Lines.

The entire area covered by this survey should have been considered as falling within the 20 fathom curve and lines spaced not greater than ½ mile apart and supplemented by additional lines where necessary as per paragraphs 12 and 13 of the Specific Instructions of April 27, 1931.

2. Adequacy of Survey.

Because of the wide spacing of sounding lines, with the resulting uncertain delineation of the depth curves together with the lack of development on many of the shoal indications found, this sheet cannot be considered an adequate survey of the area, although sufficient to show the general broken character of the bottom.

3. Additional Work.

If at any time it should be found feasible to do further work in this area, consideration should be given the advisability of splitting the lines on this survey as well as a development of these shoal indications that are furthest removed from Georges Shoal such as the 10 fathom shoal in approximate lat. 41°~~20~~ 31.5' long. 67°~~29~~ 28' and the 14 fathom in lat. 41°20', long. 67°29'.

4. Reviewed by - A. L. Shalowitz.

The irregular condition of the bottom in the area covered by this sheet which would require dragging to economically locate the shoalest water and to clear other indications emphasizes the desirability of ~~warning~~ warning ships to keep to the southward of this section and to follow the 30 fathom curve in crossing Georges Bank.

L. O. Colbert,
Chief, Field Records Section.

T. S. Borden
Chief, Field Work Section.

Examined and approved:

L. O. Colbert
Chief, Division of Charts.

G. Rude
Chief, Division of H. & T.